

CLAIMS

1. A vibration piezoelectric acceleration sensor including an element comprising:

a frame;

5 a pair of diaphragms linearly and oppositely disposed on the frame;

an under part electrode successively stacked on the diaphragm;

a piezoelectric thin film;

an upper part electrode;

a support body supporting the diaphragms at adjacent one end of each

10 diaphragm: and

a holding part holding the support body in a slidable manner and in a linear direction,

wherein the diaphragms are extended and retracted by an acceleration transmitted to the support body through the holding part of the element, and

15 wherein the acceleration is detected through a change in a natural oscillation frequency of the diaphragm.

2. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein a pair of diaphragms are linearly and oppositely disposed crossing the pair of 20 diaphragms linearly and oppositely disposed on the frame for detecting acceleration in two axes directions.

3. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein a difference in the natural oscillation frequency between the pair of diaphragms 25 is used as an acceleration signal.

4. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein the holding part is structured in a meandering manner and in a slidable

manner.

5. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein
the diaphragm, the support body and the holding part are all made of silicon.

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6. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein
the piezoelectric thin film is made of PZT.

7. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein
10 the diaphragm is formed in a wedge shape, with one end attached to the frame
and one other end attached to the support body like being hooked.

8. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein
the upper part electrode formed on the diaphragm is extendedly formed along a
15 center part of the holding part formed in a wedge shape.

9. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein
mass is added to the support body supporting the diaphragm.

20 10. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein
a pair of detecting electrode and driving electrode are disposed as the upper
part electrode formed on the diaphragm, the detecting electrode and the driving
electrode being disposed symmetrically with respect to a central axis crossing a
longitudinal direction of the diaphragm equally dividing the diaphragm.

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11. A vibration piezoelectric acceleration sensor as defined in Claim 10, wherein
tapping electrodes of the detecting electrode and the driving electrode are
disposed on the frame.

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12. A vibration piezoelectric acceleration sensor as defined in Claim 1, wherein the frame constituting the element is attached to a main body like being held so that static acceleration and dynamic acceleration can be detected.

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